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IMPLEMENTING PROJECT-BASED LEARNING WITHIN A STANDARDS-BASED GRADING SYSTEM

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IMPLEMENTING PROJECT-BASED LEARNING WITHIN A STANDARDS-BASED
GRADING SYSTEM

By

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TABLE OF CONTENTS

CHAPTER ONE: Introduction	4
Early Career	5
Current Teaching	6
Conclusion	11
CHAPTER TWO: Literature Review	13
Project-Based Learning	13
Effectiveness of Project-Based Learning	18
Needs for Implementation of Project-Based Learning	21
Project-Based Learning Assessment	22
Standards-Based Grading	23
Addressing the Standards in Project-Based Learning	25
Conclusion	26
CHAPTER THREE: Project Design	28
Introduction	28
Intended Participants	28
Curriculum Design Framework	29
Project-based Learning Design	29
Timeline	30
Project Overview	31
Standards	32
Assessment	32

Conclusion	33
CHAPTER FOUR: Reflection	34
Introduction	34
Major Learnings	34
Revisiting the Literature	35
Implications and Limitations	38
Future Research and Projects	38
Sharing Results	39
Conclusion	39
REFERENCES	41
APPENDIX A	45
APPENDIX B	47
APPENDIX C	49

CHAPTER ONE

Introduction

Education is an ever-changing field with many influencing factors at district, state, and national levels. Policy decisions influence the daily practices and learning experiences of both teachers and students. Grading practices and the best way to assess student learning are topics commonly found at the center of many policy discussions and changes.

Standards-based grading has emerged as a current best practice when it comes to assessing and communicating student learning (Shippy, Washer, & Perrin, 2013). This grading practice allows for detailed, clear communication with parents and students regarding what students are learning and how they are progressing. However, in my personal experience, it has also led teachers to focusing their instruction on one content area and one standard at a time, to make sure that each standard has been taught and assessed before moving on to the next. Each subject area is taught and assessed in isolation, without taking advantage of interdisciplinary approaches to teaching and learning. The focus on teaching and assessing all standards in all content areas has also resulted in overly teacher-led, repetitive instruction and assessment. Students are passive learners rather than active participants in building their own knowledge and making connections across content areas through student-led inquiry. This led me to ask the

question: *How can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system?*

In this chapter, I will share past teaching experiences that led me to ask the research question and explain why this research question is important to me in my current teaching position.

Early Career

During my college practicum and student teaching placements, professors and cooperating teachers tasked me with developing lessons or complete units based on topics that students were studying. I was inspired by the creative outlet these opportunities provided, and my primary focus in developing lessons was to engage students and make learning exciting.

After graduation, I entered the workforce as a fourth-grade classroom teacher in a suburban public Spanish immersion elementary school. Early on, I discovered that the primary focus of academic achievement in this school was to push students to pass their standardized assessments and meet individual growth goals on various standardized measures. Teachers loosely followed district-provided curriculums, but there was a great deal of freedom in terms of what and how teachers taught. Grading practices were an afterthought. Teachers collected various assignments, often at the end of the semester with report cards looming, assessed in-class activities and quizzes, and gave students one grade for each subject area based on their cumulative point total.

During four years of teaching at the Spanish immersion school, the focus on teaching MN state standards became greater each year. While I still wanted to make

learning engaging for my students, I was also learning the importance of making sure classroom activities had academic worth by tying them to specific standards and learning targets. However, as the district focus shifted to mastering MN state standards, overall grading practices in the classroom did not change. Point values were still awarded to various types of in-class participation and assessments, and students still earned one overall grade in each subject area.

This grading practice did not effectively communicate specific academic progress to students and parents. When parents came in for conferences, much of the conversation was focused on what specific content and standards we had been working on. I had to present many examples of student work to explain how students had earned their end-of-semester grade, which was not clear to parents just from the report card they received.

This lack of clarity in grading was also true for students. For example, when asked, students rarely knew in which specific areas of reading they succeeded or struggled. Their overall grade reflected how they felt about themselves as a reader: beginning, developing, or proficient, but provided no specific information regarding strengths or struggles with specific reading standards and skills.

Current Teaching

After four years, I changed districts to work in my current position as a fifth grade classroom teacher at an English-speaking suburban elementary school. There are many similarities to my previous district: students take several standardized assessments each year, each student is expected to meet individual growth goals on these assessments, and

the district centers instruction in all grade levels and content areas around MN state standards. One major difference in this new district was the grading system. They had recently undergone a shift from cumulative-point grading to standards-based grading.

Under this system of standards-based grading, students no longer receive one cumulative grade for each subject area: math, literacy, social studies, and science. Instead, MN state standards are taught, assessed, and recorded on report cards individually. In-class participation is no longer factored into grading. Quizzes and projects can't be entered as points toward an overall total as each quiz or project has to be aligned to specific MN state standards.

This model has several clear advantages. By reporting on individual standards, it is much easier to communicate with students and parents exactly what students are learning in each class, how they are progressing, and to give feedback on next steps. Eliminating points for in-class participation and general tests and quizzes shifts the focus of grades from being a mix of content mastery and student learning behaviors to solely assessing mastery of academic standards. Daily learning targets in the classroom are closely aligned with the specific MN state standards being taught. This practice helps students know and be able to speak about what they are learning and what they are expected to know or do at the end of a lesson or unit.

The shift to this system also has some negative impacts. The focus on individual standards led to content "silos," in which each subject area is taught in isolation during its designated time on the schedule. When the allotted 75 minutes of math are up, the math materials are put away and the class moves on to reading. All 5th grade teachers teach

literacy and math classes and are responsible for teaching all 72 MN state standards in those areas, but each team member teaches a different unit studies class to share the responsibility of teaching the 53 total science and social studies MN state standards. Sharing content teaching in this way is beneficial because it decreases overall teacher workload and allows each teacher to become an expert in his/her unit studies area.

There are a total of 125 fifth grade MN state standards in math, literacy, science, and social studies that the team is responsible for teaching students during the school year (Minnesota Department of Education). There is not enough instructional time in the school year to effectively teach every MN state standard to mastery, a common problem encountered by all grade levels.

Recognizing this issue, the district put together teams of teachers to identify a reduced number of district priority standards for each grade in each major content area: math, literacy, science, and social studies. The district team identified a total of 41 priority standards for fifth grade. The expectation continues to be that all of the MN state standards in every content area are taught, but teachers emphasize and report only the priority standards to families via semester report cards.

To prepare to teach within this new set of expectations, during summer professional learning community (PLC) hours, my grade-level team spent much of our time developing the scope and sequence for the upcoming school year. We decided when we would teach and assess each priority standard in every subject area.

With our new scope and sequence, the team started the school year with lots of energy and drive, but inevitably fell behind in most subject areas after the first few

months. Following district expectations, we taught, gathered assessment data, adjusted instruction, and post-assessed each priority standard. However, even with the scaled-back quantity of standards, we didn't always manage to fit them all in. Because we were devoting entire weeks to single standards in each subject area, we ran out of time in the school year. In the spring, we would find we needed to cram more and more content into the remaining days to get everything done. As educators, we wanted the best for our students and wanted to prepare them for success in their academic life ahead. Falling short of properly teaching them all the required fifth grade standards felt like a failure.

This teaching situation was overwhelming and highly stressful for teachers, and also boring and repetitive for students. There was not a lot of room for flexibility, choice, or for students to bring their own ideas into the classroom and guide their own learning. Students were asked to show their learning in similar ways in every class. A large amount of time was spent assessing student learning, but not enough time devoted to reflecting on if our teaching and assessment practices were working for students.

In the switch to standards-based grading, the focus of our team planning time had become which standards to cover when, and how they would be assessed. We were not looking critically at how we were providing instruction nor what was the student learning experience in each class. During PLC meetings, the team spent a lot of time answering questions like: *How are we going to cover all of the required content? What common evidence will we collect for grading?* We did not spend nearly enough time on arguably more important questions like: *What common instructional practices are we going to use in our classrooms? How can we increase active student involvement during class?*

Another problem that arose from this situation is that teachers are not planning and teaching across content areas. We are not looking for standards that fit well together and could be taught through interdisciplinary instruction. We are approaching each of our classes as the keepers of information, taking on all the responsibility for imparting knowledge to our students in math, in literacy, in science, and in social studies. We are carrying the cognitive load for students, and it is burning us out. We need to find a way to shift the responsibility of active participation onto students, for them to carry the cognitive load while we guide and support them. Not only would this help students become more engaged in their own learning, but it would allow us, the teachers, to spend more time giving students feedback and reflecting on our teaching practices rather than producing all of the content for students.

I knew of project-based learning as a classroom practice that gave students the opportunity to learn through research and inquiry, but the examples I had seen were short, engaging projects that were aligned to one or two standards in a single content area. These projects were graded using a cumulative-point total for all stages of the project, rather than assessing the individual standards taught. To meet the needs of my team, projects need to be interdisciplinary and offer opportunities for direct instruction of multiple MN state standards from multiple content areas. Additionally, each standard needs to be individually assessed within each project to fit with our standards-based grading system.

Conclusion

At the start of my professional career, I was drawn in by the creative, fun aspects of lesson planning and design as a way to create highly engaging learning opportunities for students. As I gained experience in different educational settings, focus shifted to the importance of anchoring learning activities in the standards and collecting ongoing assessment data to share with students and families, but I struggled with finding an effective and efficient way of covering all required content in all subject areas.

My most recent teaching experiences led me to believe that in many cases, teachers are working harder, but not smarter. By teaching all subjects separately from one another, teachers are increasing their workload and not using their instructional time as efficiently as they could. Finding authentic ways to incorporate interdisciplinary instruction into the school day could help teachers teach and assess multiple standards at the same time within a standards-based grading system.

In the current, isolated model, students are often subjected to mostly “sit and get” instruction during class with multiple-choice tests and quizzes to show what they know. This yields low-level engagement and buy-in from students. Teachers are the keepers of knowledge and students are passive participants in their own learning. The teacher’s role in the classroom needs to shift from being the keeper of knowledge to being a guide and resource to help and support students as they ask questions and lead their own learning.

One way of shifting these roles is through project-based learning, but examples of projects I have seen only address one or two standards in a single content area, and were created to be assessed in a cumulative-point grading system. Together, my reflections and

experiences led me to pursue the research question: *How can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system?*

In this chapter, I explained how my past experiences in teaching led me to investigate my research topic. I also outlined why this topic is important to my current position and how it will benefit my students, my colleagues, and me. In Chapter Two, I will review the literature around project-based learning and standards-based grading practices.

CHAPTER TWO

Literature Review

In researching project-based learning (PBL) in the classroom, I reviewed what experts in the field have researched and discovered. I learned about successful implementation of PBL and common pitfalls educators encounter while pursuing this form of inquiry learning with their students. I also researched what assessment experts say about standards-based grading practices and what makes that system successful. These lines of investigation led me to answer the question, *how can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system?*

In this chapter, I outline what PBL is, what elements must be included for successful implementation, what support teachers need in order to be successful using PBL in their classrooms, and what benefits and student outcomes this instructional technique yields. I also discuss what assessments are most effective with PBL, and how teachers can use feedback to help students be more successful. Finally, I define what standards-based grading is, and analyze how PBL can be used as an effective teaching tool within a standards-based grading system.

Project-Based Learning

In PBL, students identify an authentic, real-world problem or question that they want to solve. They then enter into collaborative investigation and research to learn more

about their topic, and to try and answer the essential question or solve the essential problem. (Duke, 2016). PBL involves hands-on learning, which Anderson (2010) states leads to a deeper understanding of the subject matter. One of the most important factors of PBL is that students are leading the learning. Bell (2010) notes that this learning process is facilitated by teachers, but guided by students. The Buck Institute for Education (2015) outlines seven essential design elements of a PBL project:

1. *Challenging problem or question*: This problem or question must be meaningful, open-ended, and connected to the real world.
2. *Sustained inquiry*: True PBL lasts for longer than a few days. Students should ask questions and as they answer them, ask new questions to continue and deepen the inquiry process.
3. *Authenticity*: Students are motivated to learn when the situations they are working with are real. Meaningful projects connect to and help students' communities.
4. *Student voice & choice*: Increased ownership yields higher student engagement and motivation. Students are involved in developing their own questions, dividing work between group members, and creating their final product.
5. *Reflection*: Make clear to students what they are learning, why they are learning it, and what progress they are making towards their goal.
6. *Critique & revision*: Students should be given feedback by multiple sources, and be given time to edit and adjust their work accordingly.

7. *Public product:* Having students present to an authentic audience outside of just their teachers and peers is motivating. It opens the learning community and allows the community to see what our students are doing.

Project selection. Selecting the topic for a PBL investigation is a collaborative effort between teachers and students. Many experts agree that student interest needs to be a driving force behind project selection in order to have student buy-in and increased engagement, while teachers guide and approve selection (Bell, 2010; Solomon, 2003; Duke, 2016; Moss, 2005; Mitchell, et al., 2009). Teachers need to be sure that the selected topic and project addresses standards and learning targets (Mitchell, et al., 2009). Solomon (2003) lays out three requirements for PBL: projects must be standards-based, have clearly defined goals for students, and be interdisciplinary in nature. One of the benefits of PBL, according to Solomon, is that it allows for differentiation; students choose approaches and projects based on their learning styles, intelligences, and abilities.

When teachers are choosing a project topic, it is important that the issue being investigated or the problem being solved is authentic, something that connects to the real-world and has real benefit to the students' local or global community (Trauth-Nare & Buck, 2011; Solomon, 2003; Buck Institute for Education, 2015). Karacalli & Korur (2014) posit that grappling with real-life problems and issues increases student focus, self-confidence, and responsibility. Solomon (2003) agrees, students are motivated by the real world connections of the problems they are solving. They have authentic motivation and reason for the work they are doing. It is important that the authentic problem students are working on has no single predetermined destination or solution that the teacher is

leading them to discover. Therefore, student investigation and findings about the issue are original, authentic, and important. Hill (2014) adds that instruction that is interdisciplinary, teaching content from multiple subject-areas, pushes students to engage in authentic learning and use their knowledge in real-life situations. According to Bender, Fulwider, & Stemkoski (2008), project work moves learning from content-area silos to integrating knowledge from multiple disciplines to solve real world problems.

Collaboration. Though some PBL projects are designed to be completed alone, the majority of projects are completed by a group of students collaborating and working together (Boss, 2012). In this format, teachers are guiding and advising while students collaboratively take on the active roles of investigating, developing, and presenting (Solomon, 2003).

Students conduct research as a group, make decisions collectively, and will give feedback to and receive feedback from team members (Solomon, 2003). Duke (2016) highlights the importance of collaboration time for students in a PBL setting. She claims that the bulk of student work time should be spent collaborating with others, while teachers are coaching rather than lecturing. According to Duke, engaging in cooperative activities increases literacy achievement in students. Bell (2010) adds that working as a part of a group keeps students on track and motivates them to do their part.

Feedback. High-quality feedback plays a role at every stage of the PBL process. According to experts Hattie and Timperley (2007), feedback is information that an outside agent, such as a teacher or a peer, gives someone about their performance or their understanding of a subject. Students will receive feedback from teachers and peers

multiple times during a PBL project, and may get a chance to get feedback from outside community sources as well (McGrath, 2003). Jones Miller (2013) suggests that teachers provide feedback to students that celebrates successful research skills and original thoughts, while continuing to offer suggestions for improvements. It is also important to give frequent, detailed feedback to students that is specific to the skills and standards they are working on. Feedback on works in progress will help guide students in their projects and mastery of course standards.

Researchers state that in order for PBL to be successful, students must have clearly defined learning goals and be given multiple opportunities for self-evaluation (Trauth-Nare & Buck, 2011; Solomon, 2003). Jones Miller agrees, advocating for students to have multiple opportunities to reflect on their progress towards mastery of standards. On the importance of self reflection opportunities, the Buck Institute for Education (2015) adds that reflecting on the knowledge and understanding gained through project work helps students envision how they could apply it in other contexts outside of the project. Reflecting on how the project was designed and implemented helps students think about how they will approach the next project. This reflection also helps teachers improve their PBL practice.

Presentation of findings. The culmination of a PBL project is a public presentation of findings, sometimes in the format of a created artifact. Students summarize and synthesize what they have read and learned and present their findings to an audience that often includes people from outside the classroom: community members or other people who are knowledgeable in the area of study (Mitchell, Foulger, Wetzel, &

Rathkey, 2009; Sahin & Top, 2015; Solomon, 2003). This presentation is not only a way for teachers to assess how much students learned, but it also allows students to reach a real-world audience that is interested in their findings about authentic problems (Duke, 2016).

Effectiveness of PBL

With any new initiative that a school or classroom takes on, teachers and administrators want to know if it works, and how they will know. The effectiveness of PBL can be seen in successful learner outcomes and collected assessment data.

Learner outcomes. Boss (2012) outlines successful learner outcomes teachers can use when giving feedback and identifying success criteria for PBL: Students will have acquired the skills needed to master concepts outlined by their teacher, students will be able to speak about how they are learning, how their thinking has changed, and will be able to summarize their learning in a public presentation. Solomon (2003) describes successful learner outcomes as a thorough understanding of identified issues, the retention of practiced skills, and the ability to apply those understandings and skills in new contexts. According to Bell (2010), learner outcomes include gaining a deeper understanding of the topic, higher-level reading, increased motivation to learn, and the development of independent thinking and learning skills. Bell continues to say that through PBL, students learn life skills including responsibility, independence, and discipline. PBL helps students become proficient in communication including active listening skills, negotiation, and collaboration.

Martelli & Watson (2016) and Duke (2016) agree that the knowledge formed through PBL inquiry is more transferable than knowledge acquired in traditional forms. According to Martelli & Watson, this type of learning increases the long-term retention of knowledge and problem-solving abilities, enhances collaboration in students, and improves their attitudes about learning.

Another benefit to PBL is that most projects are inherently interdisciplinary, meaning they incorporate teaching and learning from multiple content-areas (Duke, 2016). Hill (2014) finds that interdisciplinary instruction is important for students, because it links ideas and information across multiple content areas and promotes higher-level thinking. Hill states that students who engage in interdisciplinary learning perform better than students who do not. Duke (2016) adds that PBL develops important 21st Century Skills including creativity, critical thinking, and collaboration. These 21st century skills prepare students for adult activities, things like collaboration and reflection, skills they will be expected to perform in their future careers (Solomon, 2003).

Bear & Skorton (2019) advocate for students to engage in interdisciplinary learning while in school in order to adequately prepare them to enter the workforce. They state that school curricula are too segregated by discipline, causing students to struggle in the complex, real world when they need to make connections between different forms of knowledge and lines of inquiry. The authors state that employers are looking to hire candidates who can integrate multiple areas, including arts, humanities, sciences, and engineering. Highly rated skills include clear communication, both verbal and written, critical thinking, and being able to apply knowledge in multi-disciplinary situations.

According to Bear & Skorton, employers want job candidates who can comprehend and solve complex problems, are creative thinkers, and are able to collaborate with team members. Bender, Fulwider, & Stemkoski (2008) concur, and they state there is a link between PBL and professional competencies that employers are looking for in the real world.

Emphasis on developing 21st century skills extends beyond elementary, middle, and high school. A 2016 survey by the Association of American Colleges and Universities showed that almost every member of the association had a common set of emphasized learning outcomes for undergraduate students: written and oral communication, critical thinking and analytical reasoning, and the integration of learning across the disciplines (Bear & Skorton, 2019). This emphasis at the collegiate level means that it is important that teachers prepare students early by focusing on 21st century skills in the classroom in primary and secondary levels.

Assessment data. Data collected via the results of standardized assessments is the most common modern indicator of success (Bell, 2010). Research by Geier et al. (2008), Bell (2010), and Kingston (2018) supports that students engaged in PBL score better on standardized assessments than their peers. The results from a 2011 study by Expeditionary Learning Schools showed that students in project-based classrooms achieved higher scores on state-mandated assessments than students in non-project-based classrooms (Larmer & Mergendoller, 2013). Solomon (2003) also reports that PBL impacts standardized test results. In a study of Co-nect schools implementing PBL, it was discovered that schools whose students had developed PBL skills improved almost 26%

more in test scores than control schools. It was also found that PBL Co-nect schools increased their percentage of students scoring ‘proficient’ on writing tests from 6% to 77% in two years. Duke’s (2016) research revealed that teachers who use PBL units have higher achievement on standards-based social studies and informational reading assessments. In Duke’s study, pre and post assessments showed that the PBL students had developed greater content knowledge, had higher reported engagement in learning. They demonstrated better historical reasoning skills and learned more complex information related to the topic. Karacalli & Korur (2014) summarize that their research results indicate that the PBL method has a significant effect on students’ academic achievement and knowledge retention.

Needs for Implementation of Project-Based Learning

In order for PBL to be a long-term success for teachers and students, it has to be embedded into the curriculum, it can’t be an added-on activity (Bell, 2010). There is significant preparation that goes into successfully launching PBL. If PBL is being implemented at a district or grade-level level, collaboration among teachers is critical to its success, particularly around assessment. It is important that teachers are involved in creating the rubrics and assessment tools that will be used with students (Boss, 2012).

The Buck Institute for Education (BIE) hosts a three-day workshop on effective PBL assessment strategies. In this workshop, teachers develop rubrics that incorporate multiple measures to evaluate student work. The rubrics need to assess mastery of academic content in addition to collaboration and critical thinking. (Boss, 2012). Once teachers have established clear, consistent success criteria in the form of a rubric, they

need to be able to communicate these with students and model what high-quality work looks like. This includes using think-alouds and interactive modeling as well as providing exemplars.

In addition to teacher preparation and collaboration, classroom environment is an important consideration when looking at the implementation of PBL. Solomon (2003) states that a PBL classroom must be risk-free, safe environments where students can give and get feedback safely. This is an area that teachers must carefully model and teach, students must be taught how to give and receive peer feedback in order for it to be successful (Buck Institute for Education, 2015).

Martelli and Watson (2016) outline some of the criteria for successful implementation of PBL in a classroom: strong school support from other teachers and administrators, a collaborative building culture, sufficient time for implementation of the complete project, selection of problems that are small at first and directly affect the students or community, and the teacher modeling the steps of PBL explicitly for students. Potential pitfalls of PBL without preparation include: poorly-designed projects that do not go deep enough or are not rigorous enough, unprepared teachers burn out, valuable learning time is wasted, and student learning suffers (The Buck Institute, 2015a).

Project-Based Learning Assessment

As the name suggests, the basis of PBL is student-developed projects. As such, performance and production-focused assessments are very common within a PBL framework. Boss (2014) notes that when students are assessed based on a demonstration or something they produce, the rigor and relevance of that assessment is higher than a

more traditional information-recall focused test. In a performance-based assessment, students must demonstrate, apply, and reflect on their learning.

Jones Miller (2013) highlights other benefits of shifting to PBL from a teacher-centered, traditional mode of classroom learning. Rather than lecturing while students listen, teachers are available to circulate as students work, observing and providing authentic, instant feedback based on student work. This decreases the need for additional assessment that detracts from learning time. Mitchell, et. al (2009) adds that teaching students to critique, debate, and add on to the ideas of others in student-directed class discussions is an observational data collection tool teachers can use within PBL. The importance of presentation, debate, and discussion was echoed by Larmer & Mergendoller (2012), who state that a public audience is an essential element of a good project. Interacting with an audience outside of their teachers and peers can increase motivation for students to do high-quality work.

On a national level, moves are being made to shift large-scale assessments toward performance assessments. Federal contracts have been granted to two organizations to develop new assessment systems for language arts and math: The Partnership for Assessment of Readiness for College and Career (PARCC) and the Smarter Balanced Assessment Consortium (Boss, 2012).

Standards-Based Grading

Marzano (2000) believes that the purpose of grades in schools is to provide students with detailed feedback. Traditionally, grades have been given on a 0-100 point scale, and overall student scores were calculated as an average of in-class participation

and/or attendance, homework completion, projects, tests, and quizzes (Marzano & Heflebower, 2011). Marzano & Heflebower disagree with this traditional grading practice because it is not a true measure of students' understanding of target content as it takes into account student learning behaviors. When students receive one overall grade based on a collective total of points, that grade does not provide them with detailed feedback about their learning or target content, as Marzano suggests it should.

In contrast, standards-based grading is focused on student mastery of district, state, or Common Core standards. Students' grades are not calculated by a sum of points from individual assignments, but rather by progress toward mastery of standards throughout a semester (Shippy, Washer, Perrin, 2013). Jones Miller (2013) emphasizes that, "a standards-based, student-centered approach to assessment does not mean the student will never experience a formal exam. The essential difference is that the teacher knows the purpose is to provide valuable feedback to students" (p. 117). All traditional methods of assessing student learning do not disappear in a shift from traditional grading systems to standards-based grading, but the purpose behind those methods of assessing change. Assessments become vehicles for student feedback and tracking progress towards content mastery rather than points to be added to a cumulative total.

Shippy, et al. outline benefits of using a standards-based grading system. Teachers spend less time grading and recording individual assignments and more time talking with students and reviewing student work. The authors also claim that following a clear set of standards helps teachers develop assessments and interventions for students who are struggling. Marzano & Heflebower recommend that teachers implementing

standards-based grading allow students to continually update their scores on topics that have already been assessed or measured. This means that students who are struggling to master a specific standard or topic on an assessment will be retaught or given intervention support by their teacher, and then have the opportunity to reassess and receive a higher score that reflects their current understanding of the content.

Clearly communicating to students which standards are being assessed helps them understand what they need to be able to do. This, Shippy et. al argue, has been shown to increase student motivation and mirrors the types of evaluations students will see in their future careers. Standards-based grading allows teachers to communicate to students where they are in progress toward mastery of each standard, and adjust their own instruction accordingly.

Addressing the Standards in Project-Based Learning

In order to effectively implement PBL, teachers must be very familiar with all grade-level standards. PBL is designed to give students freedom and choice to pursue their interests, while still addressing the necessary state and national standards (Boss, 2012). In a standards-based grading system, the goal is student mastery of standards. Jones Miller (2013) posits that within this system it is not important that students are completing identical assignments because the focus is on the student learning that is happening, not the amount of work that the student is completing.

Many states across the country use the Common Core State Standards (CCSS) as a framework for success criteria and to guide student learning. In many places, districts are implementing PBL as a way to help students meet these CCSS (Boss, 2012). Larmer

& Mergendoller (2013) state when skills are taught together, like in PBL, it is more effective than giving assignments that teach skills in isolation. Larmer & Mergendoller find that all grade level Common Core standards emphasize informational text in language arts and literacy standards. Engaging in PBL work allows students authentic opportunities to engage with informational text. PBL also facilitates collaboration and communication between students and opportunities for presentations in various contexts, all skills that are addressed in the Common Core Speaking & Listening standards. Projects also help students develop thinking and application skills in broader content-area standards (Larmer & Mergendoller). Bender, et al. (2008) state students' abilities to clearly communicate the results or findings and the work that was done in a PBL project is a critical part of assessing the results of that project. Being able to synthesize and communicate their findings with others shows that students have a deep understanding of what they have learned.

Conclusion

Students are the most engaged when they are creating something or focused on project work. Student-driven, project-based learning allows time for teachers to differentiate and meet the needs of specific learners. When students are creating, they are applying skills they have learned across various disciplines and demonstrate a deeper understanding than surface-level recall. PBL is something that is best taken on by a partnership or a team of teachers. Working with other people helps to develop the depth of knowledge around success criteria and standards needed to build assessments in this framework. A high level of collaboration is needed to develop rubrics, as well as

exemplars of what high-quality project work looks like. After these elements have been developed, it is crucial that teachers continue to have conversations about student work, discussing where student projects fall on the created rubrics. Implementing PBL within a standards-based grading system is doable, but it must be done with intention. Teachers need to outline for students what they are expected to do, and give consistent feedback along the way to make sure they get there. Having an extensive knowledge of the standards students are expected to master is key in developing projects that address required content while allowing space for student voice and choice.

How can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system? In Chapter Two, I first defined what project-based learning is, and outlined essential design elements of a project. Next, I summarized what important learning outcomes are for students engaged in PBL and how assessment data supports the success of the PBL model. Then, I laid out the requirements for successful implementation of PBL in a classroom setting and some common pitfalls that teachers encounter. Finally, I looked at the assessment of PBL and how these assessment forms align with a standards-based grading system.

In Chapter Three I will explain the methods and frameworks used to create a project-based learning unit of study. This chapter will cover the intended participants for this unit of study and a project overview, including standards and assessment.

CHAPTER THREE

Project Design

Introduction

How can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system? This research question came about in response to the need of general education teachers for educationally valuable, engaging ways to help students become active participants in their own learning while making progress towards mastery of grade-level standards. To answer this question, I created an interdisciplinary, project-based learning (PBL) curriculum unit to be implemented in a standards-based grading system. The PBL unit is designed to teach and assess multiple standards in literacy, science, and social studies. This chapter will discuss the intended participants, curriculum design framework, project-based learning design, overview of the project, standards, and assessment.

Intended Participants

This project-based learning unit of study is meant to be implemented in a suburban elementary school of a large, upper-Midwestern city with an entire fifth grade literacy class (27-31 students). This group was chosen because it allows for the development of a unit of study accessible to a diverse group of learners. Fifth grade literacy classes at this school are heterogeneous, meaning students are not put into classes

based on their reading level range. Students that receive special education services or have other IEP/504 accommodations are also included in homeroom literacy classes.

Curriculum Design Framework

The methodology used in developing this unit came from Understanding by Design (Wiggins & McTighe, 2011). Wiggins & McTighe claim that effective teaching begins with the end: teachers need to have a clear understanding of what they want to teach, and what evidence they will use to demonstrate student learning before they begin. Thus, the standards being taught and the desired learning outcomes for students need to be in place before the unit is created. Next, detailed instruction must be planned to teach students the content and skills they need to master the selected standards and achieve the learning outcomes. Finally, assessment is an important piece of the Understanding by Design framework. Teachers decide how they will collect evidence of student learning for all identified standards and learning outcomes. This backwards design framework facilitates the design of curriculum that is purposeful and related to students' academic progress.

Project-Based Learning Design

In addition to the Understanding by Design Framework, this unit was created using the framework and guidelines developed by the Buck Institute for Education (BIE). As a leader in the field of PBL, BIE offers resources to support the design and implementation of project-based learning. BIE has outlined seven essential design elements for a successful project-based learning experience (The Buck Institute for Education, 2015a):

1. *Challenging problem or question*: The central problems or questions must be meaningful, open-ended, and connected to the real world.
2. *Sustained inquiry*: Projects last for longer than a few days.
3. *Authenticity*: Projects connect to and help students' communities.
4. *Student voice & choice*: Students are involved in developing their own questions, dividing work between group members, and creating their final product.
5. *Reflection*: Students have opportunities to reflect on what they are learning, why, and what progress they are making towards their goal.
6. *Critique & revision*: Students should be given feedback by multiple sources, and be given time to edit and adjust their work accordingly.
7. *Public product*: Students produce a final project or artifact and present to an authentic audience.

In addition to building the unit around these seven essential design elements, the Project Design Rubric created by BIE shown in Appendix A was used to evaluate the created unit of study.

Timeline

This curriculum was developed during the Spring of 2020, based on research conducted during the spring of 2019, and will be published in May of 2020. The unit of study is intended to be implemented in a fifth grade classroom over the course of six-to-eight weeks, with the teacher instructing students using the daily lesson plans

provided and allowing days in between for students to research, collaborate with their group members, and create their projects.

Project Overview

This interdisciplinary project-based learning unit of study is designed to teach and assess 5th grade MN state standards in literacy, science, and social studies. The topic of focus for this unit is the issue of climate change. The topic was chosen because it easily incorporates standards from different disciplines and also satisfies essential design elements outlined by BIE: connected to the real world; complex enough to support sustained inquiry; affects students' real-world community; and, the broad topic allows students room to develop their own questions. Though I chose the overall topic for students and the structure of the unit of study, the unit is designed to facilitate student collaboration in developing their own questions and leading their own research.

One of the main goals in designing the unit was that it provide essential instruction and assessment for multiple MN state standards and could be implemented in a standards-based grading framework. The daily lesson plans in this curriculum unit allow teachers to provide students direct instruction of the identified state standards. The unit also includes regular one-on-one and small group conferencing so teachers can give specific feedback at many points during the project.

The unit is divided into five parts with each part built around essential questions to guide student learning: Part I - mixed-genre climate change text set exploration; Part II - researching climate change and its major causes; Part III - exploring the community

impact of climate change; Part IV - making connections between climate change and MN ecology; Part V - creating an action plan to address the issue of climate change.

The unit includes detailed lesson plans with learning targets that are tied to specific standards. These lesson plans allow teachers to provide students with direct instruction they need to achieve mastery of the designated standard. Opportunities for students to collaborate with partners and small groups are also embedded within the unit. Teacher judgement will be used to balance direct instruction with sufficient time for student-led research and work time, using the skills and strategies taught in the lessons.

Standards

This curriculum is an interdisciplinary unit that covers Minnesota state standards in literacy, science, and social studies. Primary goals in the development of this curriculum were to design a project that would be an integral part of teaching and learning in the classroom; would deliver core content; and, would assess student learning and progress towards mastery of multiple standards across disciplines. The standards covered in this unit were chosen because they are priority standards identified by the district in which this unit will be implemented. This unit directly teaches and assesses five literacy standards, three science standards, and one social studies standard. A complete list of the standards can be found in Appendix B.

Assessment

During the project-based learning unit, students will be formally and informally assessed on their progress towards mastery of Minnesota state standards. Teachers will assess and give feedback on the MN Speaking and Listening Standard 5.8.1.1 many times

throughout the unit. The rest of the standards are taught and assessed within the daily lessons. For each standard, a rubric was created to give feedback to students about their progress towards mastery. The rubrics for this unit were created following the guidelines of The Buck Institute's Rubric of Rubrics, seen in Appendix C. Success criteria is communicated to students by sharing these rubrics with them during instruction.

The unit of study in its entirety, including all teaching instructions, lesson plans, resources, and rubrics, can be found in Appendix D.

Conclusion

How can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system? This chapter described the unit of study developed to answer the research question. It covered the setting, the intended student participants, the curriculum and design frameworks used, an overview of the project, the standards the unit covers, and how the standards are assessed. Chapter four will be a conclusion of this capstone project, including what I learned through this process, and what implications my research has for other educators and the field of project-based learning unit design.

CHAPTER FOUR

Reflection

Introduction

The research question this capstone set out to answer was, *how can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system?* Through the development of a project-based unit of study that teaches and assesses multiple standards in different content areas, I created a project that answers my research question.

This chapter will highlight some of my major learnings from this capstone process and revisit the literature review from Chapter Two and the research that was most impactful in the development of my project. It will also discuss the implications this project has on the field of education, how this project could lead the way for future research, and how I plan to share my results. The end of the chapter will summarize what I have gained from this capstone process.

Major Learnings

As a curriculum writer, I have learned about backwards curriculum design and best practices for creating a PBL project. Through my research I discovered that backwards curriculum design and the framework for designing a unit of project-based learning are very compatible with one another. Both advocate for beginning at the end, with the learning outcomes you want students to achieve. Once learning outcomes are

established, instruction is planned that will lead students to these outcomes. Finally, assessment is created that will provide teachers, students, and parents with feedback about how the student is progressing towards mastery of the designated learning outcomes. This curriculum design process gave me a clear, consistent progression to follow as I developed my unit of study.

As both a teacher and a curriculum writer I learned the importance of standards-based grading and the positive effects it has on students. Standards-based grading is feedback-based, it communicates to parents and students how students are progressing academically in terms of achieving mastery on specific standards. In traditional grading systems, students are often punished by losing points for lack of in-class participation, poor attendance, or other behaviors that are unrelated to their understanding and mastery of content. Grades should reflect academic learning, and academic learning only. This project helped clarify the importance of that for me.

Revisiting the Literature Review

Project-Based Learning. The most important research I did in this capstone project was on the development and design of PBL projects. The work of Duke (2016), Bell (2010), and the Buck Institute for Education (BIE) (2015a) were foundational in my understanding of what PBL is and how a PBL project should be designed. In deciding on a topic for PBL investigation, Duke and BIE state that the problem presented to students is authentic and connected to the real world. Bell adds that the learning that happens within a PBL project is facilitated by the teacher, but is led by students. PBL teachers must be responsive to student needs and interests. Both Bell and Duke emphasize the

importance of collaboration and cooperation between students throughout the PBL project process. They also speak to the effectiveness of PBL and how it is measured using assessment data. Duke additionally highlights the acquisition of 21st century skills as a beneficial student outcome of PBL. The seven essential design elements of a PBL project outlined by BIE provided a framework for me to follow as I designed my own PBL unit of study. I used BIE rubrics as a guide to ensure that my unit included features of effective PBL.

Standards-Based Grading. To fully answer my research question, I needed to learn more about best practices for implementation of standards-based grading. The bulk of my research on this topic came from Marzano (2000), Marzano & Heflebower (2011) and Shippy, et. al (2013). Marzano & Heflebower's research clearly defined the differences between standards-based grading and traditional grading practices. Traditionally, student grades are a combination of in-class participation, learning behaviors, and academic progress in a subject area. Students receive a cumulative point total, most commonly on a scale of 0-100. Marzano argues that the true purpose of grades is to provide detailed feedback to students. Giving students a single grade that is a combination of all content-area learning in addition to learning behaviors and participation does not provide detailed feedback. Marzano & Heflebower argue that instead of giving an omnibus grade, students should be graded on their progress toward mastery of specific topics. Shippy, et. al advocate that these topics be closely linked to standards. They also recommend that teachers should let students know in advance which standards they will be working on before the lesson takes place because this sets clear

goals for students, increases motivation, and mirrors what students will experience in the real world. Marzano & Heflebower and Shippey et. al. agree when implementing standards-based grading, best practice is for teachers to adjust their instruction for struggling students following assessment, and give students the opportunity to reassess and update their previous score for that standard. This research helped guide the development of rubrics for my unit of study, and influenced how I included opportunities for feedback and assessment throughout the unit lesson plans.

Contradictions. In the development of my project-based learning unit of study, there is one significant contradiction to the literature. In my research I discovered that many experts agree that student interest should be a driving force behind project selection, while teachers guide and approve selection (Bell, 2010; Solomon, 2003; Duke, 2016; Moss, 2005; Mitchell, et al., 2009). For my unit of study, I chose the central topic, climate change, without the input of students. I made this decision because I was designing a project that was to be implemented in a specific school setting, and needed to align with specific district-identified priority standards. To achieve my goal of building an interdisciplinary, project-based unit of study to be implemented in a standards-based grading system I needed to select a topic that would easily blend instruction on literacy, science, and social studies standards. However, within the unit there is ample opportunity for students to develop their own interests and lines in inquiry related to climate change. Though this decision is a contradiction to some research found in the literature, it is supported by Mitchell, et al., who state that teachers need to ensure that selected topics and projects address standards and learning targets. Despite the teacher-selected topic, the

other components of my developed unit of study follow Solomon (2003)'s three requirements for PBL: projects must be standards-based, have clearly defined goals for students, and be interdisciplinary in nature.

Implications and Limitations

The broad implication of this capstone is that it serves as an example of how teachers can implement interdisciplinary, project-based learning within a standards-based grading system. Another implication is that schools should be using standards-based grading at all levels. Students should be graded on their progress towards mastery of individual standards rather than receiving one cumulative point total grade that includes in-class participation and points earned through work on multiple standards. A final implication is that schools should implement project-based learning as a means to increase student engagement and responsibility for their own learning. There were no unexpected limitations in the creation of my project.

Future Research and Projects

This project-based learning unit of study was created to teach and assess specific district-identified MN state standards within a standards-based grading system. In the future, I would explore building a unit with students, starting with a student-selected topic and then identifying multiple standards from various disciplines that could be taught and assessed with standards-based grading. Future research could also focus on varying the types of assessments used within PBL projects. The literature on this topic would benefit from further research by diverse researchers into creating rubrics specifically for project-based learning in a standards-based grading system.

Sharing Results

My research will be shared with my colleagues and immediate coworkers during team PLC and all-staff meetings. This unit is specifically designed to teach and assess MN state standards that my team and I are responsible for teaching to our students, this is a unit we could implement when we return to school in the fall. Beyond my local community, I will share this work with other educators in the field by publishing it on Hamline University's Digital Commons Archive. This will allow a range of educators from around the world to learn from my research, and access my created project-based learning unit of study.

My project will also benefit educators because it provides an example of what project-based learning looks like within a standards-based grading system. Other educators could implement my unit as-is if it meets the needs of their students and their teaching situation, or they could modify it to encompass different state or Common Core standards.

Conclusion

How can teachers implement interdisciplinary, project-based learning to teach and assess multiple standards in a standards-based grading system? In this chapter I highlighted some of the major learnings from this capstone process and discussed the research from Chapter Two that was most impactful in the development of my project. I discussed the implications this project has on the field of education, how this project could lead the way for future research, and how I plan to share my results.

The inspiration for pursuing my research question and the eventual creation of my project-based learning unit of study was the desire to get my students more involved in their own learning. Teachers carrying the cognitive load and taking on the role of keeper of information for students in all subject areas was not working. Teachers were overwhelmed and students were disengaged; they were not actively participating in deep learning. Through my work on this capstone, I have shown that by implementing carefully planned PBL in their classrooms, teachers shift the cognitive load of learning to their students. By using backwards curriculum design and anchoring projects in specific standards, PBL can be successful in a standards-based grading framework. Through project work, students are engaged in learning that is driven by their questions and inquiry. Rather than lecturing and assessing from the front of the room, teachers have more flexibility to confer with students and give immediate feedback. PBL offers opportunities for authentic, interdisciplinary teaching and learning that is responsive to student interest and need.

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APPENDIX A

Project Design Rubric

P R O J E C T D E S I G N R U B R I C

Essential Project Design Element	Lacks Features of Effective PBL <i>The project has one or more of the following problems in each area:</i>	Needs Further Development <i>The project includes some features of effective PBL but has some weaknesses:</i>	Includes Features of Effective PBL <i>The project has the following strengths:</i>
Key Knowledge, Understanding & Success	<ul style="list-style-type: none"> ▶ Student learning goals are not clear and specific; the project is not focused on standards. ▶ The project does not explicitly target, assess, or scaffold the development of success skills. 	<ul style="list-style-type: none"> ▶ The project is focused on standards-derived knowledge and understanding, but it may target too few, too many, or less important goals. ▶ Success skills are targeted, but there may be too many to be adequately taught and assessed. 	<ul style="list-style-type: none"> ▶ The project is focused on teaching students specific and important knowledge, understanding, and skills derived from standards and central to academic subject areas. ▶ Important success skills are explicitly targeted to be taught and assessed, including critical thinking/problem solving, collaboration, and self-management.
Challenging Problem or Question	<ul style="list-style-type: none"> ▶ The project is not focused on a central problem or question (it may be more like a unit with several tasks); or the problem or question is too easily solved or answered to justify a project. ▶ The central problem or question is not framed by a driving question for the project, or it is seriously flawed, for example: <ul style="list-style-type: none"> – it has a single or simple answer. – it is not engaging to students (it sounds too complex or “academic” like it came from a textbook or appeals only to a teacher). 	<ul style="list-style-type: none"> ▶ The project is focused on a central problem or question, but the level of challenge might be inappropriate for the intended students. ▶ The driving question relates to the project but does not capture its central problem or question (it may be more like a theme). ▶ The driving question meets some of the criteria (in the Includes Features column) for an effective driving question, but lacks others. 	<ul style="list-style-type: none"> ▶ The project is focused on a central problem or question, at the appropriate level of challenge. ▶ The central problem or question is framed by a driving question for the project, which is: <ul style="list-style-type: none"> – open-ended; it will allow students to develop more than one reasonable answer. – understandable and inspiring to students. – aligned with learning goals; to answer it, students will need to gain the intended knowledge, understanding, and skills.
Sustained Inquiry	<ul style="list-style-type: none"> ▶ The “project” is more like an activity or “hands-on” task, rather than an extended process of inquiry. ▶ There is no process for students to generate questions to guide inquiry. 	<ul style="list-style-type: none"> ▶ Inquiry is limited (it may be brief and only occur once or twice in the project; information-gathering is the main task; deeper questions are not asked). ▶ Students generate questions, but while some might be addressed, they are not used to guide inquiry and do not affect the path of the project. 	<ul style="list-style-type: none"> ▶ Inquiry is sustained over time and academically rigorous (students pose questions, gather & interpret data, develop and evaluate solutions or build evidence for answers, and ask further questions). ▶ Inquiry is driven by student-generated questions throughout the project.

Authenticity	<ul style="list-style-type: none"> ▶ The project resembles traditional “schoolwork;” it lacks a real-world context, tasks and tools, does not make a real impact on the world or speak to students’ personal interests. 	<ul style="list-style-type: none"> ▶ The project has some authentic features, but they may be limited or feel contrived. 	<ul style="list-style-type: none"> ▶ The project has an authentic context, involves real-world tasks, tools, and quality standards, makes a real impact on the world, and/or speaks to students’ personal concerns, interests, or identities.
Student Voice & Choice	<ul style="list-style-type: none"> ▶ Students are not given opportunities to express voice and choice affecting the content or process of the project. ▶ Students are expected to work too much on their own, without adequate guidance from the teacher and/or before they are capable. 	<ul style="list-style-type: none"> ▶ Students are given limited opportunities to express voice and choice, generally in less important matters (deciding how to divide tasks within a team or which website to use for research). ▶ Students work independently from the teacher to some extent, but they could do more on their own. 	<ul style="list-style-type: none"> ▶ Students have opportunities to express voice and choice on important matters (questions asked, texts and resources used, people to work with, products to be created, use of time, organization of tasks). ▶ Students have opportunities to take significant responsibility and work as independently from the teacher as is appropriate, with guidance.
Reflection	<ul style="list-style-type: none"> ▶ Students and the teacher do not engage in reflection about what and how students learn or about the project’s design and management. 	<ul style="list-style-type: none"> ▶ Students and teachers engage in some reflection during the project and after its culmination, but not regularly or in depth. 	<ul style="list-style-type: none"> ▶ Students and teachers engage in thoughtful, comprehensive reflection both during the project and after its culmination, about what and how students learn and the project’s design and management.
Critique & Revision	<ul style="list-style-type: none"> ▶ Students get only limited or irregular feedback about their products and work-in-progress, and only from teachers, not peers. ▶ Students do not know how or are not required to use feedback to revise and improve their work. 	<ul style="list-style-type: none"> ▶ Students are provided with opportunities to give and receive feedback about the quality of products and work-in-progress, but they may be unstructured or only occur once. ▶ Students look at or listen to feedback about the quality of their work, but do not substantially revise and improve it. 	<ul style="list-style-type: none"> ▶ Students are provided with regular, structured opportunities to give and receive feedback about the quality of their products and work-in-progress from peers, teachers, and if appropriate from others beyond the classroom. ▶ Students use feedback about their work to revise and improve it.
Public Product	<ul style="list-style-type: none"> ▶ Students do not make their work public by presenting it to an audience or offering it to people beyond the classroom. 	<ul style="list-style-type: none"> ▶ Student work is made public only to classmates and the teacher. ▶ Students present products, but are not asked to explain how they worked and what they learned. 	<ul style="list-style-type: none"> ▶ Student work is made public by presenting or offering it to people beyond the classroom. ▶ Students are asked to publicly explain the reasoning behind choices they made, their inquiry process, how they worked, what they learned, etc.

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APPENDIX B

Standards Taught and Assessed in the Unit

MN Literature Standard 5.1.1.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

MN Informational Text Standard 5.2.6.6 Analyze multiple accounts by various cultures of the same event or topic, noting important similarities and differences in the point of view they represent.

MN Informational Text Standard 5.2.3.3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

MN Writing Standard 5.6.7.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

MN Speaking, Viewing, Listening and Media Literacy Standard 5.8.1.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions by making comments that contribute to the

discussion and elaborate on the remarks of others. d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions. e. Cooperate and problem solve to make decisions as appropriate for productive group discussion.

MN Earth and Space Science Standard 5.3.4.1.1 Identify renewable and non-renewable energy and material resources that are found in Minnesota and describe how they are used.

MN Life Science Standard 5.4.4.1.1 Give examples of beneficial and harmful human interaction with natural systems.

MN Life Science Standard 5.4.2.1.1 Describe a natural system in Minnesota, such as a wetland, prairie or garden, in terms of the relationships among its living and nonliving parts, as well as inputs and output.

MN Citizenship and Government Standard 5.1.1.1.2 Identify a public problem in the school or community, analyze the issue from multiple perspectives, and create an action plan to address it.

APPENDIX C

Rubric for Rubrics

RUBRIC for RUBRICS

	Criteria	1 Below	2 Approaching	3 Meeting
DESIGN	Selection & Clarity of Criteria (rows)	Criteria being assessed are unclear, have significant overlap, or are not derived from appropriate standards for product/task and subject area	Criteria being assessed can be identified, but not all are clearly differentiated or derived from appropriate standards for product/task and subject area	All criteria are clear, distinct, and derived from appropriate standards for product/task and subject area
	Distinction between Levels (columns)	Little or no distinction can be made between levels of achievement	Some distinction between levels is clear, but may be too narrow or too big of a jump	Each level is distinct and progresses in a clear and logical order
	Quality of Writing	Writing is not understandable to all users of rubric, including students; it has vague and unclear language which makes it difficult for different users to agree on a score	Writing is mostly understandable to all users of rubric, including students; some language may cause confusion among different users	Writing is understandable to all users of rubric, including students; it has clear, specific language that helps different users reliably agree on a score
USE	Involvement of Students in Rubric Development *	Students are not involved in development of rubric	Students discuss the wording and design of the rubric and offer feedback/input	Teachers and students jointly construct rubric, using exemplars of the product or task
	Use of Rubric to Communicate Expectations & Guide Students	Rubric is not shared with students	Rubric is shared with students when the product/task is completed, and used only for evaluation of student work	Rubric serves as a primary reference point from the beginning of work on the product/task, for discussion and guidance as well as evaluation of student work

*Considered optional by some educators and a critical component by others
 Rubric adapted from Dr. Bonnie B. Mullinix, Monmouth University, NJ

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